TM-P60 with Peeler
(Bluetooth® Interface Model)

Technical Reference Guide

EPSON

English

Rev. A
411331400

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ESC/POS® Proprietary Command System

EPSON took the initiative by introducing ESC/POS, a proprietary POS printer command system including patented commands and enabling versatile POS system construction with high scalability. Compatible with all types of EPSON POS printers and displays, this proprietary control system also offers the flexibility to easily make future upgrades. Its popularity is worldwide.

The influence on the environment of radio wave radiation

- ❏ The Radio Frequency module that can be installed in this product radiates the same high frequency energy as some other high frequency devices but the level of the energy radiated from it is suppressed so that it is much lower than the electromagnetic energy radiated from radio equipment like cell phones.

- ❏ Under some situations and in certain environments, the use of this equipment is sometimes limited by the owner of the building or a representative with responsibility for the group. For example, it may be restricted in the following case:

  - Use in an environment where it may cause interference with other devices and services.

- ❏ If you do not understand the radio device usage policy in a specific group or environment, such as an airport, ask permission before turning on the power of this product.

RF Module

This equipment contains the following wireless module.

Manufacturer: Seiko Epson Corporation
Model Name: M224A
Product Name: Bluetooth Interface board for printer

Note about interference

- ❏ The Radio Frequency module that can be installed in this product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

- ❏ If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

  - Reorient or relocate the receiving antenna.

  - Increase the separation between the equipment and receiver.

  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

  - Consult your dealer or an experienced radio/TV technician for help.

- ❏ Never disassemble or modify this product or the installed Radio Frequency module.

- ❏ Seiko Epson Corporation shall not be liable for interference to radio/TV resulting from changes or modifications to this product or the installed Radio Frequency module not expressly approved by Seiko Epson Corporation.

- ❑ Other radio equipment sometimes uses the same frequency band that this unit uses. To prevent radio wave interference with other radio equipment, pay attention to the following matters when you use this product:

  - The Radio Frequency module that can be installed in this product uses the Industrial Scientific and Medical band (2.4 GHz), FH-SS modulation, and the interference distance is 20 m.
  - Other equipment that uses the same frequency band used by the Radio Frequency module that can be installed in this product includes equipment for industry, science and medical treatment, microwave ovens, HomeRF, and radio and other broadcasting equipment (both ones that require a license and ones that do not require a license).
  - Confirm that radio and other broadcasting equipment are not used nearby before using this product.
  - When trouble occurs, for example, if the Radio Frequency module causes problems such as radio wave interference, consult your dealer.

Revision Information

Revision	Page	Altered Items and Contents
Rev. A	All pages	Newly authorized

About This Manual

Aim of the Manual

This manual was created to provide information on the TM-P60 with Peeler printer for anyone who is developing hardware, installations, or programs. Programmers will also want to consult other documents.

Contents of the Manual

Chapter 1, "General Information."	General description of features plus specifications.
Chapter 2, "Setup."	Contains introduction of control methods and each connection form.
Chapter 3, "Troubleshooting."	Contains troubleshooting information.
Chapter 4, "Application Development Information."	Contains information on such matters as DIP switches, memory switches, error processing for using TM-P60 with Peeler.
Appendix A, "About Bluetooth."	Contains information on Bluetooth.
Appendix B, "Character Code Tables."	Contains the supported character tables.
Appendix C, "FAQ."	This section provides answers to frequently asked questions.

Related Software and Documents

Related software and documents

Software/document name	Description
TM-P60 with Peeler Bluetooth Interface Model User's Manual	This provides basic handling procedures for the end user of the printer
TM-P60 with Peeler (Bluetooth Interface Model) Technical Reference Guide	This Manual
ESC/POS Application Programming Guide	This provides descriptions in Acrobat format of the commands used by each TM printer, along with sample programs and other information about the printers
EPSON OPOS ADK	This is a OCX driver
EPSON OPOS ADK Manual	This provides information for anyone who is programming using OPOS. This is included in the EPSON OPOS ADK
EPSON Advanced Printer Driver	This is a Windows driver
EPSON Advanced Printer Driver Manual	This provides information for anyone who is programming using the APD (EPSON Advanced Printer Driver)

Safety Precautions

EMC and Safety Standards Applied

Product Name: TM-P60 with Peeler

Model Name: M196D

The following standards are applied only to the printers that are so labeled. (EMC is tested using the EPSON power supplies.)

North America: EMI: FCC/ICES-003 Class B
Safety: UL 60950/CSA C22.2 No. 60950

WARNING

The connection of a non-shielded printer interface cable to this printer will invalidate the EMC standards of this device.

You are cautioned that changes or modifications not expressly approved by Seiko Epson Corporation could void your authority to operate the equipment.

FCC Compliance Statement For American Users

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

FCC Canadian Users

This Class B digital apparatus complies with Canadian ICES-003.

RF Module

This equipment contains the following wireless module.

Manufacturer: Seiko Epson Corporation

Model Name: M224A

Product Name: Bluetooth Interface board for printer

USA

NOTICE

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This device conforms to IC, Low Power License-Exempt Radio Communication Devices (RSS-210).

The information such as Certification No., Model Name, and Manufacturer Name are described on the surface of the module.

The TM-P60 with Peeler Bluetooth® Interface Model can be Used Only in the Countries/Areas Listed Below:

USA and Canada.

Key to Symbols

The following symbols are used in the documentation for this product. See the specific warnings and cautions at appropriate points throughout this guide.

⚠ DANGER:

Dangers must be observed carefully to avoid serious injury or death.

⚠ WARNING:

Warnings must be followed carefully to avoid serious bodily injury.

⚠ CAUTION:

Cautions must be observed to avoid minor injury to yourself or damage to your equipment.

✎ ***Note:***
Notes have important information and useful tips on the operation of your printer.

Safety Precautions

This section presents important information to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

⚠ WARNING:

- ❏ *Be sure not to use this product near medical equipment. Otherwise a cardiac pacemaker or medical electrical equipment may be affected by radio waves.*
- ❏ *Be sure to use this product 22 cm or more away from the operation site of a cardiac pacemaker. Otherwise the operation of the cardiac pacemaker may be affected.*
- ❏ *Do not use this product near automatically controlled devices such as automatic doors or fire alarms. Radio waves can cause these devices to malfunction and may result in injury.*
- ❏ *Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Continued use may lead to fire or electric shock. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.*
- ❏ *Never attempt to repair this product yourself. Improper repair work can be dangerous.*
- ❏ *Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.*

- ❑ *Be sure to use the specified power source. Connection to an improper power source may cause fire or shock.*
- ❑ *Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock.*
- ❑ *Do not allow foreign matter to fall into the equipment. Penetration of foreign objects may lead to fire or shock.*
- ❑ *If water or other liquid spills into this equipment, unplug the power cord immediately, and then contact your dealer or a Seiko Epson service center for advice. Continued usage may lead to fire or shock.*
- ❑ *Do not place multiple loads on the power outlet (wall outlet). Overloading the outlet may lead to fire.*
- ❑ *Always supply power directly from a standard domestic power outlet.*
- ❑ *Handle the power cord with care. Improper handling may lead to fire or shock.*
  - *Do not modify or attempt to repair the cord.*
  - *Do not place any object on top of the cord.*
  - *Avoid excessive bending, twisting, and pulling.*
  - *Do not place cord near heating equipment.*
  - *Check that the plug is clean before plugging it in.*
  - *Be sure to push the prongs all the way in.*
- ❑ *If the cord becomes damaged, obtain a replacement from your dealer or a Seiko Epson service center.*

⚠ *CAUTION:*

- ❑ *Do not connect cables other than as described in this manual. Different connections may cause equipment damage and burning.*
- ❑ *Be sure to set this equipment on a firm, stable, horizontal surface. Product may break or cause injury if it falls.*
- ❑ *Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage, fire, or shock.*
- ❑ *Do not place heavy objects on top of this product. Never stand or lean on this product. Equipment may fall or collapse, causing breakage and possible injury.*

- ❏ *To ensure safety, please unplug this product and remove the battery pack prior to leaving it unused for an extended period.*
- ❏ *When moving this product, be sure to unplug the power cable and any other cables connected to the product.*
- ❏ *After printing, the print head can be very hot. Be careful not to touch it and to let it cool before you clean it. Do not damage the print head by touching it with your fingers or any hard object. Touching the hot print head may cause burns.*

Safety Notes On Battery Pack

⚠ *DANGER:*

- ❏ *If any liquid from the battery gets into your eyes, promptly wash it out with clean water for more than 10 minutes and consult your doctor at once. If you do not, the liquid may cause loss of eyesight.*
- ❏ *Do not disassemble or modify the battery pack. This may cause fire, explosion, leakage, overheating, or damage.*
- ❏ *Do not expose the battery to fire or heat it. This may cause fire, explosion, leakage, overheating ,or damage.*
- ❏ *Never leave the battery where the temperature may exceed 60°C (140°F) such as in a car parked in the sun or under direct sunlight. This may cause fire, explosion, leakage, overheating, or damage.*
- ❏ *Do not solder lead wires or terminals directly onto the battery, or disassemble or modify it. This may cause fire, explosion, leakage, overheating or damage.*
- ❏ *Do not connect the plus and minus terminals together. This may cause fire, overheating, or electric shock.*
- ❏ *Do not connect the battery directly to a power outlet or the cigarette lighter of an automobile. This may cause fire, explosion, leakage, overheating, or damage.*
- ❏ *Do not insert the battery with its plus and minus terminals reversed. If you cannot insert the battery smoothly, do not force it. This may cause fire, explosion, leakage, overheating, or damage.*
- ❏ *Do not make a hole with a tool such as a screw in the battery pack. This may cause leakage or fire caused by a battery short or heating.*

⚠ *WARNING:*

- ❏ *Keep the battery out of the reach of children to avoid harm to the children.*

- ❑ *Charge the battery exclusively with the specified battery charger. Using a charger other than the one specified may cause fire, explosion, leakage, overheating, or other damage.*
- ❑ *Unplug the charger if charging is still incomplete after the specified time it should take. Continuing to charge the battery may cause fire, explosion, or overheating.*
- ❑ *Do not expose the battery to water. Do not allow water to contact the terminals. This may cause fire, overheating or electric shock.*
- ❑ *Do not hit or throw the battery. This may cause explosion or overheating.*
- ❑ *Do not use the battery if you find something wrong with it such as leakage, color change, or deformity. Using it may cause fire, explosion or overheating.*
- ❑ *Keep the battery away from fire or flame if it produces a strange odor or leakage. Otherwise fire or explosion may occur.*
- ❑ *Should any battery liquid get on skin or clothing, promptly wash it off with clean water. If you do not, the liquid may damage your skin or clothing.*
- ❑ *Do not short the plus and minus terminals with any metal objects such as a necklace. This may cause overheating or leakage, which can lead to burning or injury.*

⚠ *CAUTION:*

- ❑ *LIP-2500 lithium-ion batteries are exclusively for use with the specified printer. Do not use them with other equipment.*
- ❑ *Before using the battery, make sure that its terminals are clean. Unclean terminals may not allow current to flow.*
- ❑ *Do not touch the battery right after using it for a long time. It will be hot and may burn you.*
- ❑ *When the battery will not be used for a long time, be sure to remove the battery before storing.*

Restriction of Use

When this product is used for applications requiring high reliability/safety such as transportation devices related to aviation, rail, marine, automotive etc.; disaster prevention devices; various safety devices etc.; or functional/precision devices etc., you should use this product only after giving consideration to including failsafes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care etc., please make your own judgment on this product's suitability after a full evaluation.

Recycling the Batteries

Contains a lithium-ion battery. Must be recycled or disposed of properly.

For American Users:

The lithium-ion battery is recyclable. At the end of its useful life, under various state and local laws, it is illegal to dispose of this battery into your municipal waste stream. Please call 1-800-8-BATTERY for information on how to recycle this battery.

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Chapter 1
General Information

1.1 Features

The TM-P60 with Peeler with Peeler is a mobile label printer designed to meet the needs of retail, grocery stores, DIYs, and speciality chain stores for in-store printing of items such as shelf labels, discount labels, and product tags.

1.1.1 General

- ❑ Compact size with rugged design to ensure top reliablility.
- ❑ Support a bluetooth wireless interface.
- ❑ Belt clip for maximum mobility.
- ❑ The peeler function is installed as the standard. (It is easy to switch between the peeler mode and the label continuous issuing mode.)
- ❑ Long term use is possible by using the battery.
- ❑ Printing various kinds of barcodes is possible..

1.1.2 Printer handling

- ❑ Drop-in paper loading and autocutter for easy use

1.1.3 Printing

- ❑ Clear, crisp high speed thermal receipt printing.

1.1.4 Software

- ❑ Command protocol is based on the ESC/POS proprietary command system
- ❑ Automatic status back (ASB) function that automatically transmits changes in printer status.
- ❑ Current TM-T88 series applications are instantly compatible with the printer.

1.2 Product Structure

1.2.1 Standard Parts Included with the Printer

This printer is packed with the materials listed below.

- ❑ User's Manual
- ❑ Roll paper: 1 roll
- ❑ Battery pack unit (LIP-2500), and its User's manual: 1

Note:
To charge the battery, you have to use "PS-10" (AC adapter) or "OT-CH60" (Rapid battery charger). Both are options.

1.2.2 Related materials for TM-P60 with Peeler

TM-P60 with Peeler has the related materials listed in the following table.

Category	Name	Description
Options	PS-10	This is an exclusive AC adapter for battery charging. It is able to connect to TM-P60 with Peeler directly.
	OT-CH60	This is an exclusive battery charger. To use it you must take the battery out of the TM-P60 with Peeler. The charging period: 2.5 hours.
	OT-RS60	This is to connect TM-P60 with Peeler and host PC with serial connection.
	LIP-2500	This is a spare battery. It is the as same as ithe ncluded one.
	OT-ST60	This is a shoulder strap.
Consumables	Roll Paper	This is required to print.
Manuals	User's Manual	This manual is packed in the carton box.
	Technical Reference Guide	This Manual.
	FAQ about ESC/POS command	This Manual is Quick Reference of ESC/POS command with a simple sample program & Tips.
	ESC/POS Application Programming Guide	This Manual is a Command Reference Guide of ESC/POS command, including some sample programs & Tips.
	Command Comparison between the TM-T88II/T88III and the TM-P60	This provides detailed command comparison information among the printers.
Drivers (WIndows environment)	OPOS ADK	This provides the OCX driver which is based upon OPOS. It has manuals, sample programs, and TMFlogo utility.
	Advanced Printer Driver	This is a Windows Driver. This Driver has a manual, sample programs, and utilities to use the driver.
Utilities (Windows environment)	Memory Switch setting Utility	This is a utility to adjust the setting (Memory Switch) of this printer. See "2.8.3 Memory Switches" (page 2-17) for details.
	TMFlogo	This is a utility to store "NV graphics" into this printer. It helps printing "NV graphics."

1.3 Consumables

1.3.1 Roll paper

Roll paper widths are 60 mm and 58 mm {2.36"/2.28"}.

Note:
When you use 60mm width roll paper, you have to change the printer setting. See "2.8.5 Adjusting Roll paper width" (page 2-25)

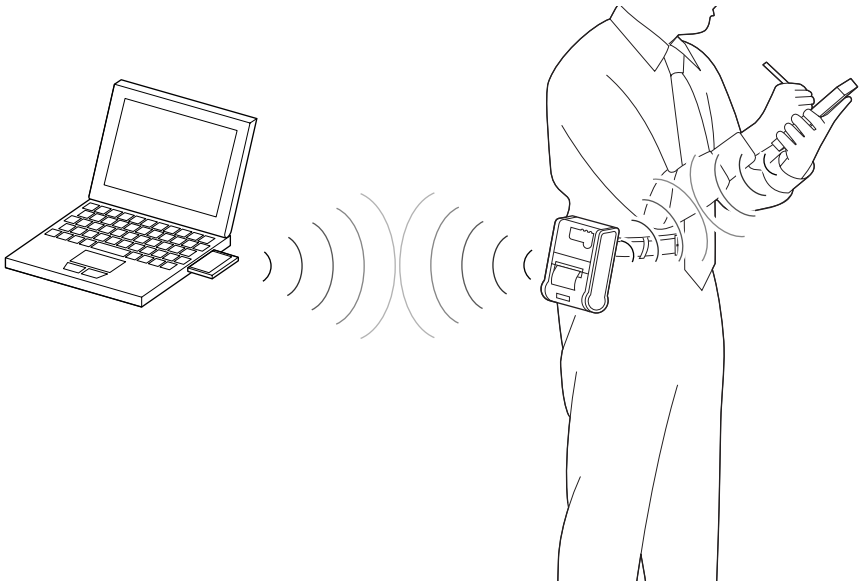
1.4 Product Specifications Overview

Print method		Thermal line printing
Print density		203 dpi × 203 dpi (dpi: dots per 25.4 mm (dots per inch))
Printing width (default)		48.5 mm, 388 dot positions (label width 54 mm, backing paper width 58 mm)
Print font	**Font**	Font A: 12 × 24, Font B (default): 10 × 24, Font C: 8 × 16
	Characters per line (default)	Font A: 35, Font B: 42, Font C: 52
	Character size (W × H)	Font A: 1.50 × 3.0, Font B: 1.25 × 3.0, Font C: 1.0 × 2.0
	Character set	95 Alphanumeric, 48 International, 128 × 10 Graphic
Paper	**Roll paper dimensions (default)**	29.5 ± 0.5 mm ~ 57.5 ± 0.5 mm (59.5 ± 0.5 mm by removing the spacer installed)
	Paper roll spool diameter	Outside 31.4 mm or more
	Receipt paper	Original: Kanzaki Specialty Paper (USA): P350 (paper thickness: 62 µm) P310 (paper thickness: 58 µm) P300 (paper thickness: 56 µm)
	Label roll paper	ETLA058050025 ETLA055050051 ETLA029050025
Print speed		Maximum 80 mm/s (maximum 40 mm/s when using the peeler), when number of dots per dot line is 64 dots or less (printing with a fully charged battery, at 25°C, print density 100%)
Interface		Bluetooth®/Serial (RS-232C)
Receive buffer		128 bytes
Power consumption	**Specified battery**	Lithium-ion battery: Product name: LIP-2500, Trade name: Seiko Epson Corporation Output: DC 7.4 V Capacity: 2200 mAh
	AC adapter (option)	Output voltage: DC 12 V Input voltage: AC 100 V ~ 240 V Product name: PS-10, Trade name: Seiko Epson Corporation
Life	**Mechanism**	When printing labels:500,000 labels issued When printing receipts:10,000,000 lines printed
	Print head	100,000,000 dots
Temperature /humidity	**Operation (Printing quality guaranteed)**	5 ~ 45°C, 10 ~ 90% RH
	Storage	Abnormal operations not found when the printer is left under the environment of 25°C, 60% RH for 2 hours after it was left in the following conditions: High temperature and humidity: 50°C, 90% RH for 120 hours High temperature: 70°C for 120 hours Low temperature: -25°C for 120 hours
Overall dimensions (mm)		103 × 159 × 65 (W × D × H)
Mass (approx.)		640 g (including LIP-2500 (battery pack) but not roll paper)

1.5 Using the TM-P60 with Peeler

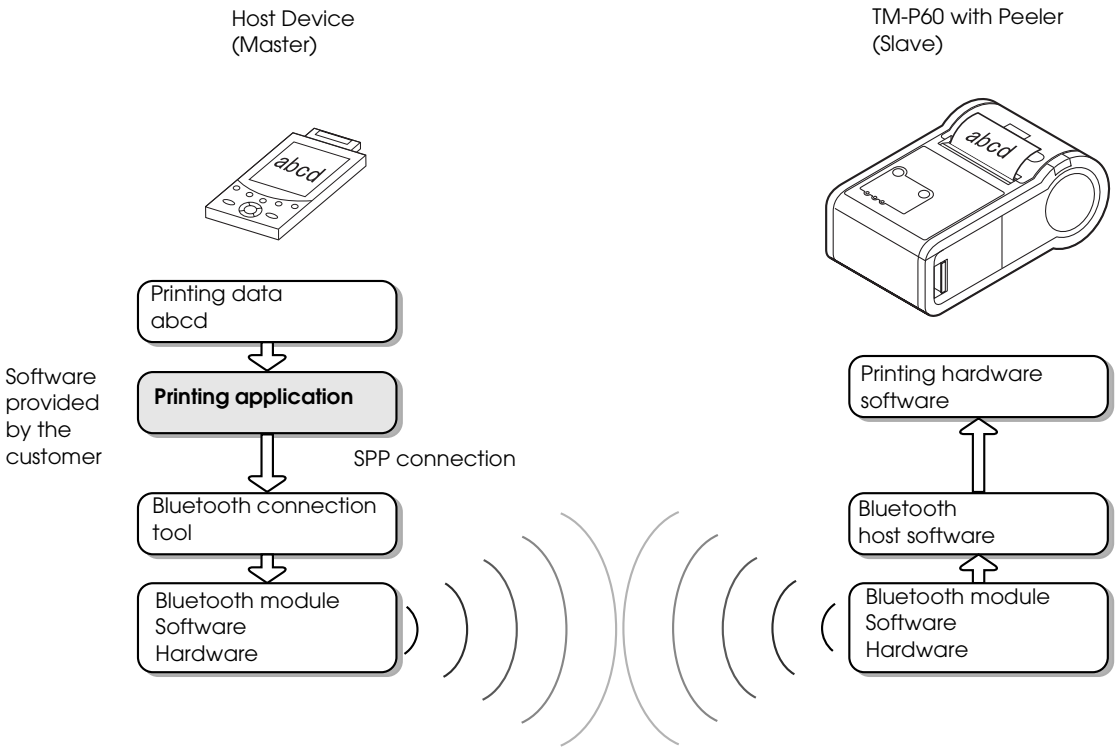
The TM-P60 with Peeler can be used in the following ways.

Bluetooth Connection



1.6 Bluetooth Protocol

The protocol for printing to the TM-P60 with Peeler via Bluetooth is shown below.



The TM-P60 with Peeler operates as the slave device when Bluetooth is used. Communication settings etc. are made on the master device.

The master Bluetooth device comes loaded with a mechanism to connect via the Bluetooth protocol but is not loaded with a printing application. The user must therefore develop an application for the master device for printing to the TM-P60 with Peeler.

Epson does not provide a driver for the master Bluetooth device. Use the "ESP/POS Application Programming Guide" in order to develop a print application.

1.6.1 Security

Bluetooth uses a frequency hopping (FH) method that changes frequency quickly and often when transmitting. This method makes transmitted data very difficult to intercept.

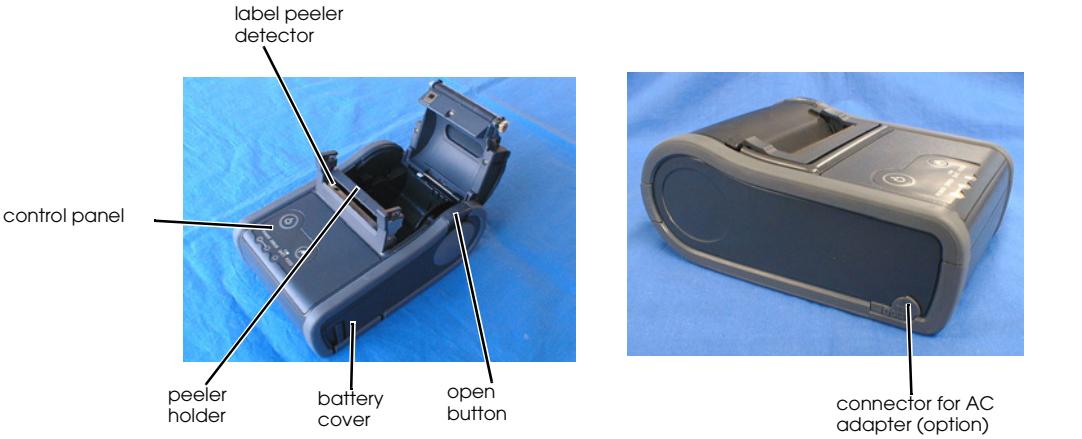
Bluetooth uses radio waves that have a smaller range compared with wireless LAN, which limits the Bluetooth communication range. The limited range of the radio waves also makes data interception difficult.

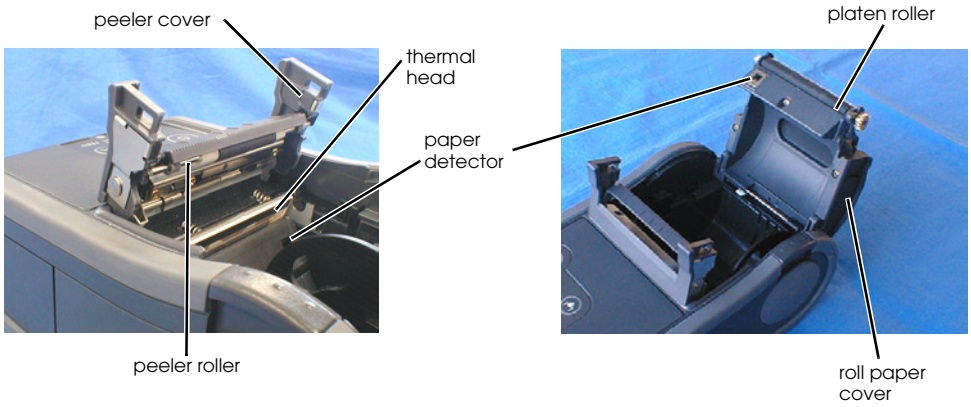
Bluetooth also uses a passkey authentication system when communicating between new Bluetooth devices. An encryption function encrypts the communication data as well, making it very difficult for data to be decrypted by an external device.

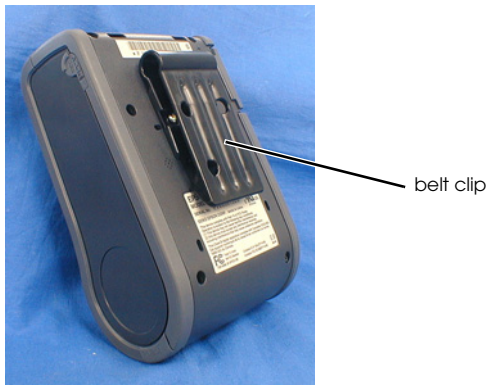
Chapter 2
Setup

2.1 Part Name and Basic Operation

2.1.1 Part names

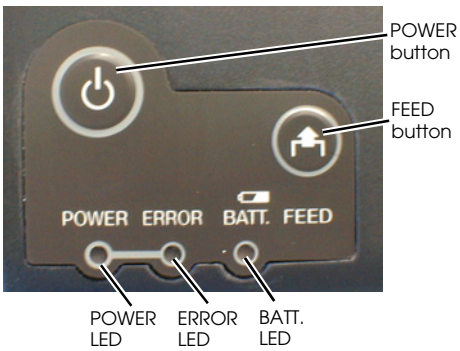






2.1.2 Control Panel

The control panel is shown below.



- ❏ POWER LED
- ❏ ERROR LED
- ❏ BATT. LED
- ❏ POWER button
- ❏ FEED button

2.1.2.1 LED

POWER

POWER LED	Meaning
On	Power is on.
Off	Power is off.
Flashing	The printer is in power-off operation or is in an area where wireless communication is not possible.

ERROR

Printer Condition	ERROR LED	Meaning
Power On	On	Printer is offline (paper out, power-on initialization, roll paper cover open, power-off operation, or the remaining battery charge is not enough for printer operation when the battery is used to supply the power.)
	Off	Printer is online.
	Flashing	It indicates an error. See "3.1 LED Blinking Pattern" (page 3-1) for troubleshooting
Power Off, battery installed, and AC adapter connected	On	Indicates that an abnormality occurred during battery charging. The battery must be replaced with a new one.
	Off	No problem.

BATT.

Printer Condition	BATT. LED	Meaning
Power On without AC adapter	On	Remaining battery charge is not enough. It must be charged.
	Off	Remaining battery charge is adequate.
	Flashing	Remaining battery charge is below half.
Power Off and battery installed	On	The battery is being charged.
	Off	The battery is fully charged.

2.1.2.2 Control Panel Buttons

The control panel has a FEED button that you may have to use, although most paper handling functions will be handled by your software.

POWER

Press the button to turn the power on or off. To turn off the power, you need to hold the button for more than 2 seconds.

FEED

Use this button to feed roll paper or to start a roll paper self test, or start printing status sheet. See "3.5.1 Self test mode" (page 3-3).

Note:
The FEED *button can be disabled by using an ESC/POS command. Refer to "ESC/POS Application Programming Guide" for details.*

2.1.3 Beeper Function

This printer has a "beeper" function. This function causes beeping in specified situations. The situations are the following:

- ❑ The remaining battery charge is low (Memory switch can enable/disable this function)
- ❑ Roll paper is out (Memory switch can enable/disable this function)
- ❑ A error has occurred except "printer temperature error." (Memory switch can enable/disable this function)
- ❑ Start of status sheet printing
- ❑ The printer and host device are not connected (The default setting is for the buzzer not to sound, but it can be set to sound using the memory switch.)

Note:
About memory switch, see "2.8.3 Memory Switches" (page 2-17).

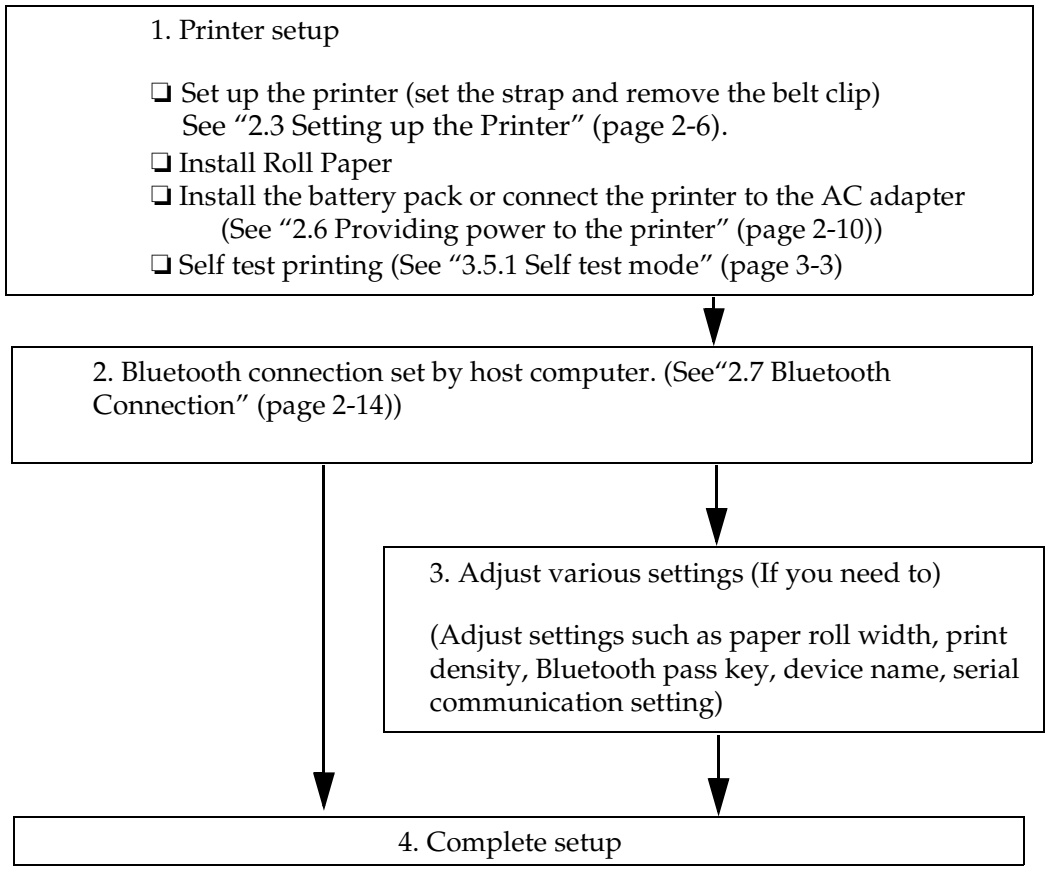
About status sheet, see "3.5.1 Self test mode" (page 3-3).

The beeper can be beeped by a command from an application program.
See "4.3 Beeper function" (page 4-2)

2.2 Setup Flow

You have to set up your printer to use it. And you can adjust some features by customizing them. This section describes the setup.

The setup flow of preparing to use printer is below.


1. Printer setup
❏ Set up the printer (set the strap and remove the belt clip)
See "2.3 Setting up the Printer" (page 2-6).
❏ Install Roll Paper
❏ Install the battery pack or connect the printer to the AC adapter
(See "2.6 Providing power to the printer" (page 2-10))
❏ Self test printing (See "3.5.1 Self test mode" (page 3-3)
2. Bluetooth connection set by host computer. (See"2.7 Bluetooth Connection" (page 2-14))
3. Adjust various settings (If you need to)
(Adjust settings such as paper roll width, print density, Bluetooth pass key, device name, serial communication setting)
4. Complete setup

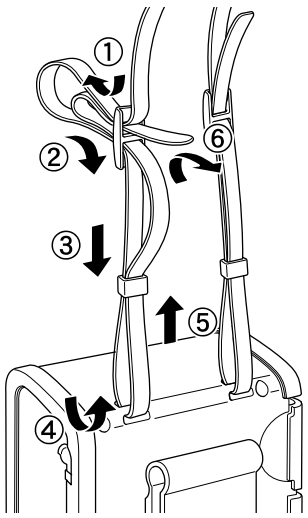
2.3 Setting up the Printer

The TM-P60 with Peeler can be set up as indicated below.

- ❑ Attached to a belt. If you do so, you don't need to follow any further printer setup instructions.
- ❑ Attached to a shoulder strap and carried on your shoulder.
- ❑ Set up on a table. Remove the belt clip if you do so.

2.3.1 Attaching the Shoulder Strap

Attach the shoulder strap by following the procedures indicated on the right.



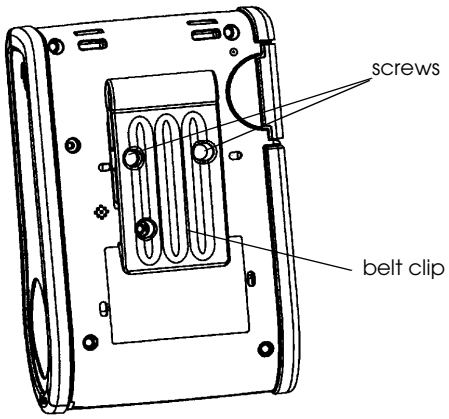
⚠ CAUTION:

Make sure to hang the shoulder strap only from your shoulder. In order to prevent injury, never hang it from your neck.

Make sure the paper roll side is facing down when using the device vertically.

2.3.2 Setting Up on a Table

Remove the belt clip on the back when setting up on a table. Remove the two screws shown in the diagram.



⚠ CAUTION:

Make sure to place the device on a horizontal surface when setting up on a table.

2.4 Switching Issuing Mode

The issuing mode can be switched between the label continuous issuing mode and the label peeler issuing mode by folding the peeler holder under the peeler cover.

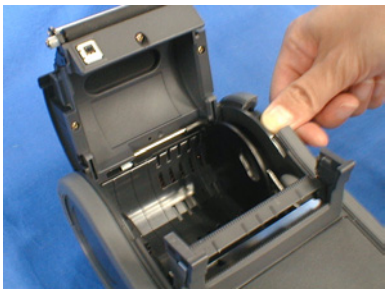
2.5 Installing the Roll Paper

⚠ CAUTION:

Be sure to use roll paper that meets the specifications.

✎ ***Note:***
Do not use paper rolls that have the paper glued to the core.

1. Press the open button to open the roll paper cover and the peeler holder.

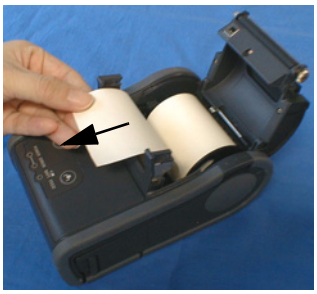


2. When using the label continuous issuing mode:
   Fold the peeler holder under the peeler cover. This covers the label peeler detector.

When using the label peeler issuing mode:
Peel off the first label, and press the peeler change over lever to lift the peeler holder.

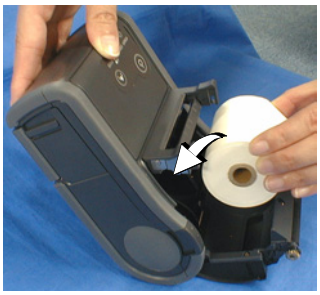
3. When installing the label paper horizontally:

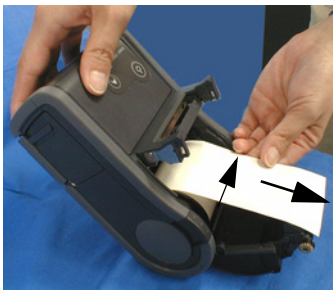
   Set the new roll paper on the inside of the roll paper cover and pull the leading edge of the roll paper.



   When installing the label paper vertically:

   Set the new roll paper in the inside of the roll paper cover.
   Pull the leading edge of the roll paper.
   Align the left edge of the roll paper with the edge of the cover.





Note:
Note the direction the paper comes off the roll.

To use the label in the label peeling issuing mode, peel the first label from the liner, them set the liner to the peeler roller.

4. Close the roll paper cover.

Note:
When closing the peeler cover, make sure to close it firmly, pressing both ends.

5. Close the peeler holder.

Note:
Removing the issued label enables the label peeler detector to detect a PAPER END and the printer to issue the next label. If the first label is not removed when using the label peeler issuing mode, the thickness of the label and the backing paper overloads the peeler holder, possibly stopping the paper feed motor.

When the label is completely fed to the peeling position, the printer goes in the label removal waiting state. The user is required to remove the label by him/herself.

When the label peeler detector detects the paper at the power on, the printer goes in the label removal waiting state. In this case, the ERROR LED is turned on. The user is required to remove the label by him/herself.

If the printer's power is turned off while the label peeler detector detects the paper presence, the printer goes into the label removal waiting state when the power is turned on. Therefore, make sure to remove the label when the power is turned off.

2.6 Providing power to the printer

You can supply power through the battery pack packaged with the printer or the AC adapter provided as an option.

2.6.1 Before Using the Battery Pack

Charge the battery pack prior to using the printer for the first time. Cautions relating to battery pack safety are previously indicated in this manual. See the battery manual packaged with the printer for further details.

⚠ WARNING:

Be sure to use the battery that came with the printer. Using a battery other than the one specified may cause fire, explosion, leakage, overheating, or other damage.

2.6.2 Installing the battery

⚠ CAUTION:

There is a risk of explosion if the battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

1. Slide the battery cover to open it.

2. Install the battery.

3. Close the cover.

2.6.3 Charging the battery

When you charge the battery, you have a choice of two methods.

❏ Charge the battery using the exclusive battery charger (option: OT-CH60).

In this method, remove the empty battery from printer; then put it onto a battery charger. For the battery charger operation, see the user's manual of the battery charger.

This method requires about 2.5 hours to charge the battery.

❏ Charge the battery from the AC adapter (option: PS-10).

For this method, turn off the printer. Then connect the AC adapter into the printer's connector for AC adapter. (For instructions, see "2.6.5.1 Connecting the AC adapter" (page 2-12).) During the charging, the BATT. LED comes on (color: red). When the charging is completed, the BATT. LED goes off.

This method requires about 4 hours to charge the battery.This method also requires the printer's power to be turned off. If the power is turned on, the battery is not charged; the power is consumed to drive the printer.

⚠ CAUTION:

The battery LED may not illuminate if the battery is incorrectly inserted. If the LED fails to illuminate, quickly correct the battery direction.

Quickly unplug the AC adapter and battery pack if a battery charging error occurs. This could indicate that the battery pack is malfunctioning and should not be used.

Note:
If the battery temperature is 0°C or lower, or 40°C or higher, the battery will not charge, even if the battery LED is illuminated. We recommend charging the battery at room temperature (10 °C ~ 30 °C).

Make sure to recharge the battery pack if it has not been used for a week or longer.

The battery charging time varies depending on the battery level and other individual variables.

2.6.4 Using with a Battery Pack

The battery LED indicates the battery level.

Printer Status	Battery LED	Explanation
Power ON, no AC adapter	Not Illuminated	Battery level is sufficient.
	Flashing	Battery level is half or less.
	Illuminated	Battery level is insufficient. Battery needs to be recharged.

Note:
The battery level is only a general guide. Replace the battery as soon as possible once the battery level is displayed as L.

If the battery level quickly returns to "Level L" even after recharging, the end of the battery life has been reached. Replace with a new battery. (Battery life: Approximately 500 charges)

Never remove the battery pack or AC adapter while printing.

The correct battery level will not be displayed if the battery pack temperature and ambient temperature differ. If you require a relatively accurate battery level display, we recommend that you wait until the battery pack has cooled down after charging before use.

The print density may vary depending on the user environment and battery level.

2.6.5 Providing power from the AC adapter unit

When you would like to drive the printer with AC adapter (it is an option), read following section.

2.6.5.1 Connecting the AC adapter

1. Turn off the printer.

2. Connect the AC adapter into the connector as shown following figure.

connector for AC adapter
(It is covered by a cap)

Connect AC adapter to here opening the cap

⚠ WARNING:

Make sure you use the EPSON PS-10 AC adapter or equivalent.
Using an incorrect AC adapter may cause fire or electrical shock.

Note:
Never remove the AC adapter while printing, even if the battery pack is connected.

If the battery level quickly returns to "Level L" even after recharging, the end of the battery life has been reached. Replace with a new battery.

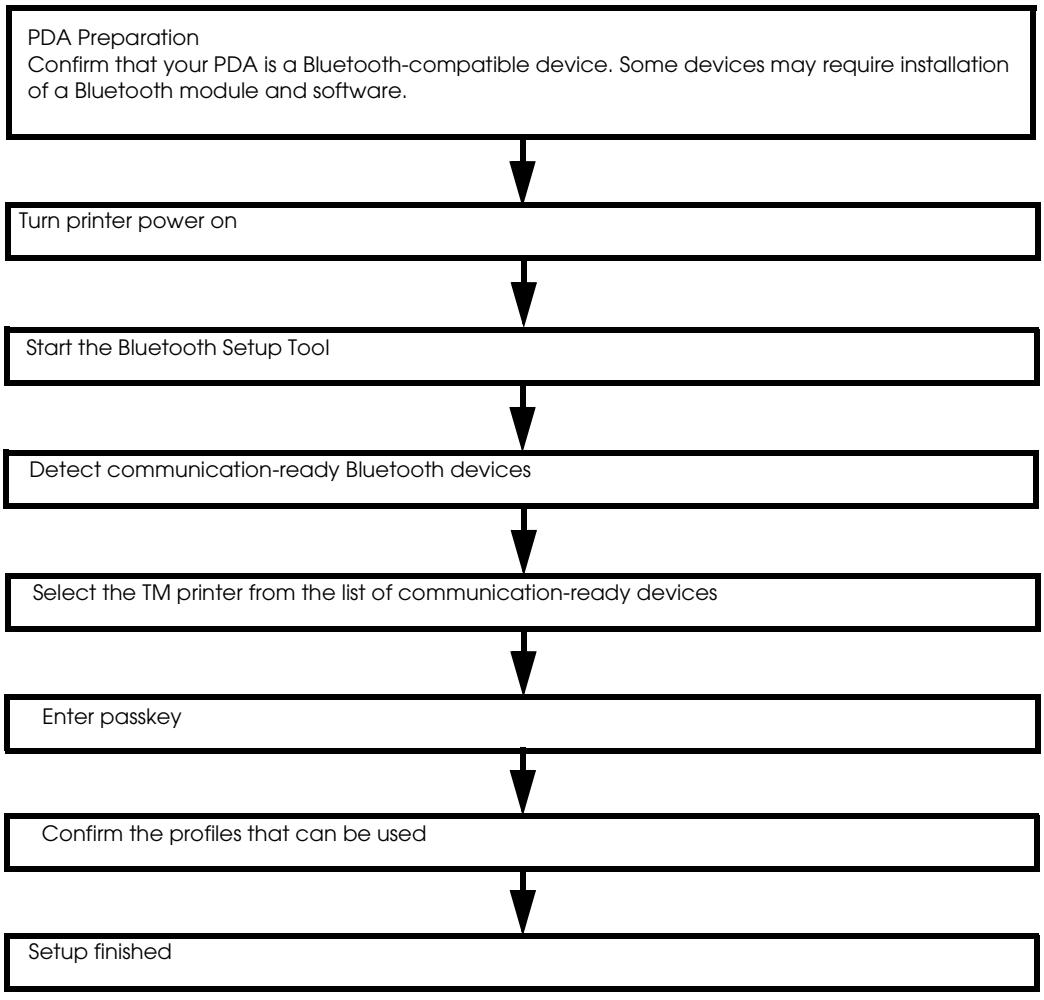
Never remove the battery pack or AC adapter while printing.

2.7 Bluetooth Connection

The procedures for connecting the host device to the TM-P60 with Peeler using Bluetooth are indicated below. The TM-P60 with Peeler uses SSP (Serial Communication Protocol) to create the Bluetooth connection. A Bluetooth-compatible PDA is used as an example for connecting via Bluetooth. In order to print, you must install a PDA printer application on the PDA.

2.7.1 Bluetooth Connection Overview

Follow the PDA Bluetooth setup tool instructions for setup operations. One example is indicated below. Use your host device manual for actual operations.


PDA Preparation
Confirm that your PDA is a Bluetooth-compatible device. Some devices may require installation of a Bluetooth module and software.
Turn printer power on
Start the Bluetooth Setup Tool
Detect communication-ready Bluetooth devices
Select the TM printer from the list of communication-ready devices
Enter passkey
Confirm the profiles that can be used
Setup finished

Since the output of Bluetooth radio waves is limited, communication can be affected by the setup location, direction installed, other devices in the area, etc., which may disrupt or decrease the speed of communication. As a result, make sure to thoroughly check device operation prior to using.

Establish the Bluetooth connection by using the PDA's Bluetooth setup tool. Set up the connection by following the direction indicated by this tool.

When setting up multiple TM-P60 with Peeler devices, don't turn on power to multiple devices at the same time. Turn on power to and set up one device at a time.

2.7.2 PDA Preparation

Prepare a Bluetooth-compatible PDA. The required operating environment is indicated below.

- ❏ Compatible with Bluetooth Ver.1.1
- ❏ Compatible with SPP (virtual serial connection)
- ❏ The user must provide the print application.

2.7.3 Turning printer power on

Check that a paper roll is loaded and that power is being supplied to the device; then press the power button.

Note:
If a serial cable (OT-RS60) is connected when the printer power is turned on, communication functions will be disabled. Make sure to remove any serial cables before turning power on.

2.7.4 Starting the Bluetooth Setup Tool

Start up the Bluetooth setup tool from the PDA menu screen. Continue setup in accordance with this tool's instructions.

2.7.5 Detecting Communication-ready Bluetooth Devices

Use the Bluetooth setup tool to detect nearby devices. The PDA searches the immediate area for other devices that can be connected via Bluetooth. If a communication-ready TM-P60 with Peeler is detected, the TM-P60 with Peeler device name is displayed. The default setting is "TAIYO SPP."

Note:
The device name may differ. Refer to the self-test print results.

If multiple devices can be connected, those device names will be listed.

2.7.6 Entering a Passkey

Input a passkey when the Bluetooth setup tool displays an input screen. Refer to the self-test print results for the passkey. The default setting is "4254."

Note:
The device name may differ. Refer to the self-test print results.

Some devices may time out if you take too long to enter the passkey. If this occurs, enter the passkey and return to the previous step to set up.

2.7.7 Confirming the profiles that can be used

Use the Bluetooth setup tool to confirm the Bluetooth profiles that can be used. The TM-P60 with Peeler supports only "SPP" (virtual serial communication).

Note:
"Service" may be displayed as the profile.

2.7.8 Completing the Bluetooth Connection

The Bluetooth connection is complete once all setting are completed with the Bluetooth setup tool.

Once communication with a device has been established, some PDAs add a connection icon to their screen. This allows the user to re-establish connection by clicking the icon.

2.8 Adjusting Various Settings

This printer is able to be adjusted for the items below:

- ❑ DIP switch (handshake of serial communication conditions)
- ❑ Memory switch (buzzer on/off, status notification, serial communication conditions, paper roll width, print density, Bluetooth passkey and device name, other)
- ❑ Roll paper width (58mm / 60mm)
  Adjusting the spacer and memory switch
- ❑ Change the Bluetooth passkey and device name.

The current settings can be confirmed by a self test. (See "3.5.1 Self test mode" (page 3-3).)

Note:
When you adjust these items, we recommend you to confirm the new setting. You can confirm the settings by running a self-test. See "3.5.1 Self test mode" (page 3-3) for detail.

2.8.1 How to Confirm Current Settings

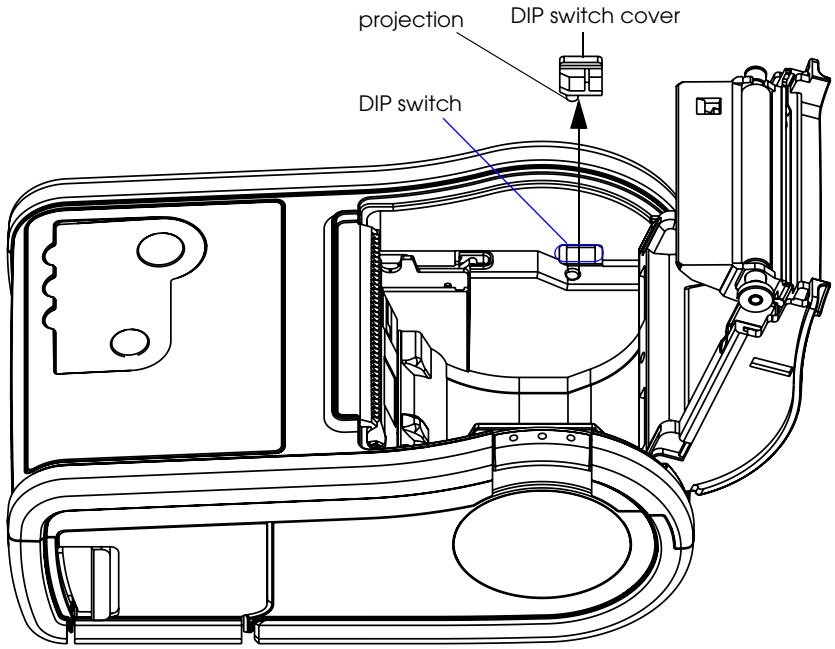
You can use a self-test to confirm the current settings. See *"3.5.1 Self test mode" (page 3-3).*

2.8.2 DIP switch

This printer has DIP switches 1~4. These are located as shown in the figure below.

1. Make sure the printer is turned off.

2. To access the DIP switches, remove the DIP switch cover by hand (pull out the cover and then pull it upward to release the projection.)



DIP switch

Handshake	DSW1	DSW2	DSW3	DSW4
DTR/DSR	OFF	ON	OFF	ON
RTS/CTS	OFF	OFF	ON	OFF

DSW 1 is fixed to OFF.

Note:
Serial communication setting is assigned to MemorySwitch (baud rate, parity). See the table " Customize values" (page 2-18) for details.

3. After set the DIP switch, attach the DIP switch cover.

2.8.3 Memory Switches

This printer has a set of software switches called "Memory switches" . The memory switch set has "Msw 8," "Customize value," "Serial communication condition."

The "Memory switch setting utility" can change the Memory switch set to ON or OFF as shown in the table below:

Note:
When you use this printer with RS-232C interface, you should adjust the "serial communication setting" (see the table " Serial communication" (page 2-19).)

The Memory switch can be changed by either one of two methods:

- *Memory switch setting utility*
- *Control by an ESC/POS command*

Settings of the memory switch are stored in the NV memory; therefore, even if the printer is turned off, the settings are maintained. Excessive use of this function may destroy the NV memory. As a guideline, do not use this function more than 10 times a day.

Memory Switch 8

SW	Function	On	Off
1	Status notice *1	Transmit s*	Doesn't transmit
2	Beeper tone when the battery is low	Beeps *	Doesn't beep
3	Beeper tone when this printer can't connect to any access point	Beeps *	Doesn't beep
4	Beeper tone when roll paper is out	Beeps *	Doesn't beep
5	Beeper tone when an error occurs	Beeps *	Doesn't beep
6 ~ 8	Reserved	-	Fixed to Off *

* : Default setting

Note:

Msw 8-1:
When On is selected, this printer transmits power-off notice, power-on notice, and battery status to a host PC. When off is selected, this printer doesn't transmit these.

Msw 8-2:
When On is selected, the printer beeps the buzzer for 10 seconds when the battery status enters "battery level is L" or "battery level is S."

Msw 8-3, 8-4, 8-5:
When On is selected, the buzzer beeps for 10 seconds for each situation. For information on printer errors (Msw 8-5), see "3.1.1 Error Types" (page 3-1).

Customize values

Function	Selectable value
Roll paper width	58mm or 60 mm (Default: 58mm)
Time for auto power off	Disable, or 1 ~ 60 minutes (Default: 20 minutes)
Print density	70%, 75%, 80%, 85%, 90%, 95%, 100%, 105%, 110%, 115%, 120%, 125%, 130%, (Default: 100%)

* "Time for auto power off": When a printer isn't received any data from host PC, and isn't operated anything (ex. opening the roll paper cover, pressing the FEED button) during the specified time, the printer turns off itself automaticaly.

Note:

See "2.8.5 Adjusting Roll paper width" (page 2-25) also to adjust roll paper width.

Serial communication

Function	Selectable value
Baud rate	9600 bps
	19200 bps (default)
	38400 bps
Parity	None (default)
	Odd
	Even

Note:
When this printer connected with serial interface, the data length is always "8 bit." The handshake is changed by a DIP switch; see "2.8.2 DIP switch" (page 2-16) for details.

2.8.3.1 Memory Switch Setting Utility

The following PC is required in order to use the memory switch setting utility.

Bluetooth Connection

- ❏ OS: Windows 2000 Professional, Windows XP Professional
- ❏ Communication Port: Bluetooth is required

Download the memory switch setting utility and install on the setup PC. [See "2.8.7 Downloading Drivers, Utilities, and Manuals" (page 2-27)]

Serial Connection

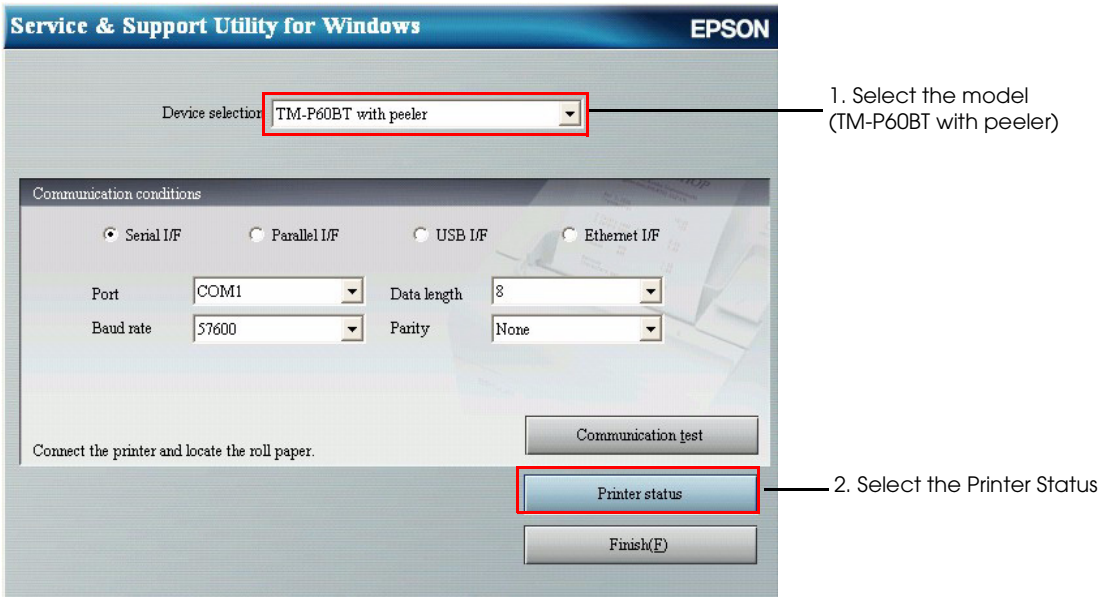
- ❏ OS: Windows 2000 Professional, Windows XP Professional
- ❏ Communication Port: Must have a serial port

Download the memory switch setting utility and install on the setup PC. [See "2.8.7 Downloading Drivers, Utilities, and Manuals" (page 2-27)]

Connect the serial cable. [See"2.8.6 Connecting a serial interface cable" (page 2-25)]

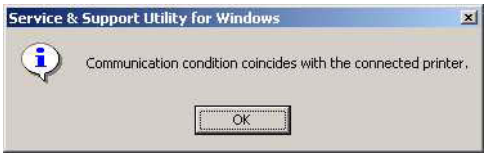
Starting the Memory Setup Utility

The following setup screen is displayed when you start the memory setup utility.



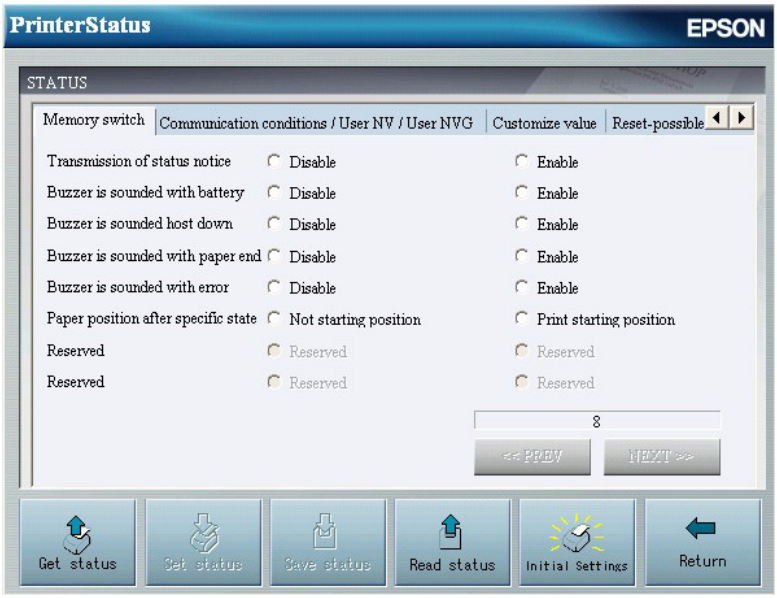
1. Select TM-P60BT with peeler.
2. Press the “Printer Status” button.

Confirm the communication status of the connected printers. The following message is displayed when connection with the printer has been properly established.



Memory Switch

Select the "Memory Switch" tab. Press the "Get Status" button to retrieve and display the current settings.



Memory Switch 8

SW	Function	On	Off
1	Status notice *1	Transmit s*	Doesn't transmit
2	Beeper tone for low battery	Beeps *	Doesn't beep
3	Beeper tone for host disconnection	Beeps *	Doesn't beep
4	Beeper tone when roll paper is out	Beeps *	Doesn't beep
5	Beeper tone when an error occurs	Beeps *	Doesn't beep
6	Paper position immediately after a specific state	"Print starting position"	Not "Print starting position"
7 ~ 8	Reserved	-	-

* : Default setting

Note:

Msw 8-1:
When On is selected, this printer transmits power-off notice, power-on notice, and battery status to a host PC. When off is selected, this printer doesn't transmit these.

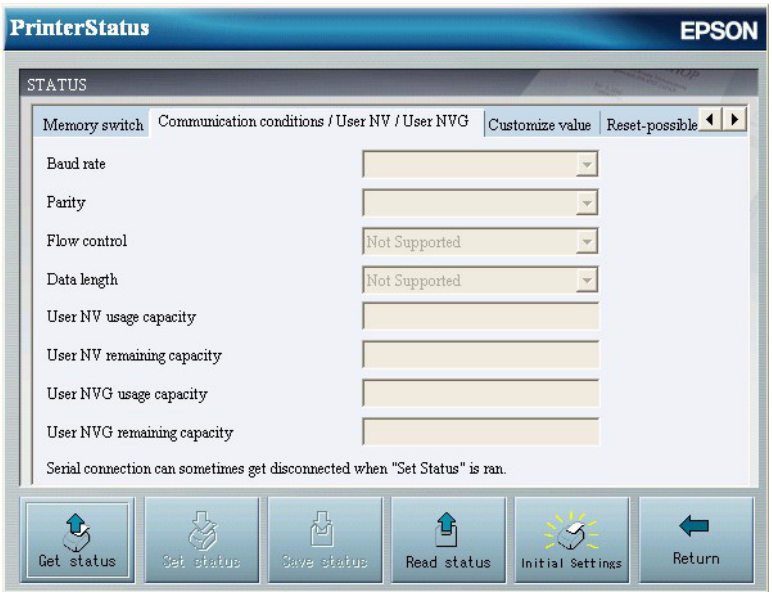
Msw 8-2:
When On is selected, the printer beeps the buzzer for 10 seconds when the battery status enters "battery level is L" or "battery level is S."

Msw 8-3, 8-4, 8-5:
When On is selected, the buzzer beeps for 10 seconds for each situation. For information on printer errors (Msw 8-5), see "3.1.1 Error Types" (page 3-1).

After setup, press the [Refresh Status] button to write the settings to the printer.

Communication Conditions

Select the [Communication Conditions] tab. Press the “Get Status” button to retrieve and display the current settings.



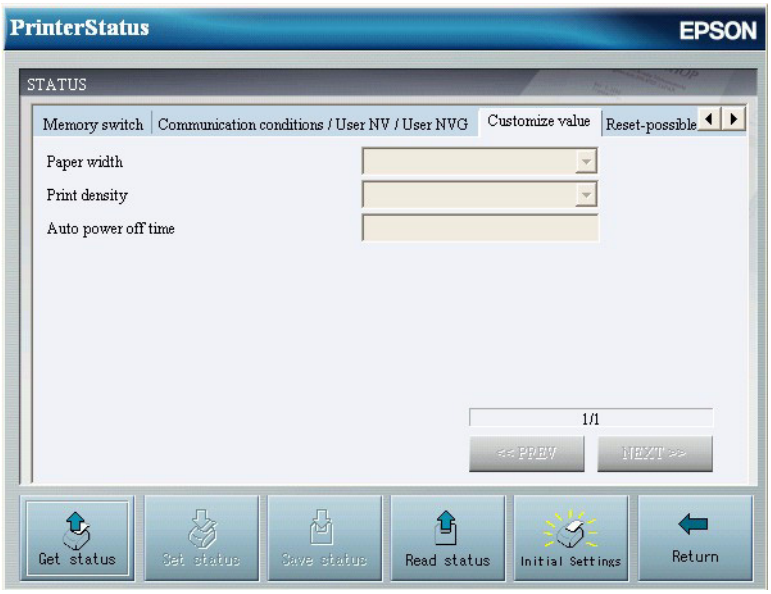
Communication Conditions

Function	**Selectable Values**
Baud Rate	9600bps
	19200bps (Default)
	384000bps
Parity	None (default)
	Odd Number
	Even Number

After setup, press the [Refresh Status] button to write the settings to the printer.

Customized Value

Select the [Customized Value] tab. Press the "Get Status" button to retrieve and display the current settings.



Customized Value

Function	Selectable Values
Roll Width	58mm or 60mm (Default: 58mm)
Auto Power Off Interval	Deactivated, or 1~60 minutes (default:20 min)
Print Density	70%, 75%, 80%, 85%, 90%, 95% 100%, 105%, 110%, 115%, 120%, 125%, 130% (Default: 100%)

* "Auto Power Off Interval": If the printer does not receive data from the host PC within the specified amount of time and no operations are executed (for example opening the paper roll cover and pressing the FEED button), then the printer automatically shuts off.

Note:

See "2.8.5 Adjusting Roll paper width" (page 2-25) for details on how to adjust the paper roll width.

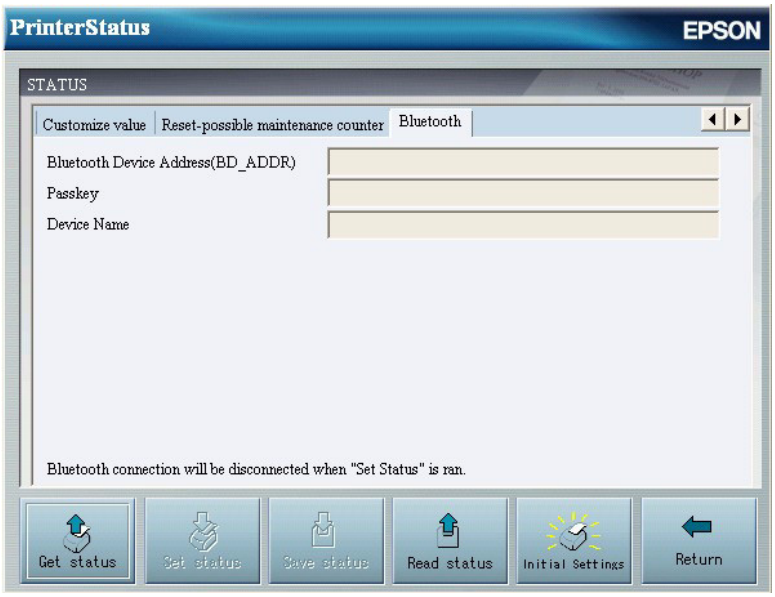
After setup, press the [Refresh Status] button to write the set content to the printer.

2.8.4 Changing the Bluetooth passkey and device name.

The Bluetooth passkey settings are the same as other memory switches. They can be set using the memory switch setting utility or the ESC/POS command.

Follow the steps below to set using the memory setting utility.

1. Start up the memory switch setting utility.
2. Press the “Printer Status” button.
3. Select the [Bluetooth] tab. Press the “Get Status” button to retrieve and display the current settings.



Bluetooth

Function	Selectable Values
Bluetooth Device Address	Cannot be changed
Passkey	(Default: 4254)
Device Name	(Default: TAIYO SPP)

After setup, press the [Refresh Status] button to write the set content to the printer.

2.8.5 Adjusting Roll paper width

6 paper widths from 29.5 mm to 57.5 mm are available by using the roll paper guide. If you remove the roll paper guide, you can also select 59.5 mm.

1. Press the button and open the peeler holder and the roll paper cover.
2. Remove the roll paper if there is one.
3. Insert your finger into the hole of the roll paper guide and lift it upward. Undo the top part that is fixed in one of the slots.

4. Move the roll paper guide to the position matching the width of the paper you are using.
5. Insert the top of the roll paper guide and press it down until it clicks.
6. Insert the roll paper.

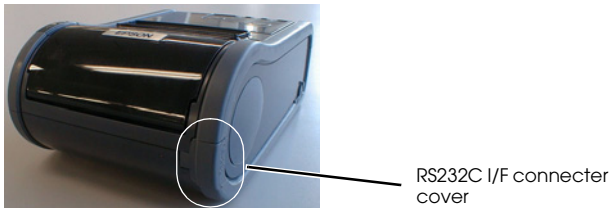
Note:
Do not increase the paper width after you have used a narrower width because if the printer has ever been used with narrow paper, part of the head contacts the platen. Therefore, when a wider setting is used, part of the head or the cutter blade may be worn out, which can cause poor printing and a blunt cutter blade.

2.8.6 Connecting a serial interface cable

When you aren't setting up the printer with a serial interface, omit this section.

Use the following procedure.

1. Turn off the printer.
2. Open the "RS232C I/F connecter cover."



3. Connect the serial interface cable (option) to the printer and the serial port of the host PC.

4. Turn on the printer while pressing the FEED button.

5. The printer prints the self test result, which is necessary for the next step.

Note:
If you connect the serial cable to the printer while turning it on, the printer doesn't support serial communication. Turn off the printer before connectiing the cable.

⚠ CAUTION:

Do not pull on the cable while a serial cable is connected.

Do not suspend the printer while a serial cable is connected.

2.8.7 Downloading Drivers, Utilities, and Manuals

Drivers, utilities, and manuals can be downloaded from one of the following URLs:

For customers from North America, go to the following web site: **http://www.epsonexpert.com/** and follow the onscreen instructions.

For customers in other countries, go to the following web site: **http://www.epson-pos.com/** Select the product name from the "Select any product" pulldown menu.

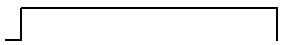
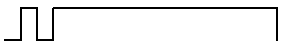
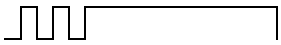
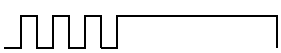
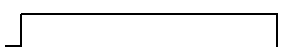
Chapter 3
Troubleshooting

This section describes general troubleshooting.

3.1 LED Blinking Pattern

3.1.1 Error Types

The printer stops all printer operations, goes offline, and the ERROR LED blinks when an error is detected.

ERROR	Description	ERROR LED Blinking Pattern (320 ms)	Recovery
Printer temperature error (*1)	The internal temperature of the printer is extremely high		Recovers automatically when the printer cools
Autocutter error	The autocutter does not work correctly		Recovers by error recovery command. (See "Paper Jam" (page 3-3))
Circuit error	The circuit board doesn't work		Impossible to recover
Memory error	The printer does not work correctly in R/W checking.		Impossible to recover
Voltage error	The power supply voltage is extremely high or low		Impossible to recover
Software error	The firmware does not work correctly.		Impossible to recover.
The radio unit error	The IEEE802.11b radio interface unit doesn't work.		Impossible to recover
Overload error	Temperature of thermal head is abnormally high.		Impossible to recover
Battery charging error (*2)	Battery voltage does not reach the prescribed voltage. Battery charging is not performed.		Replace the battery

Note:
The ERROR LED is on when the printer is offline (paper out, power-on initialization, roll paper cover open, power-off operation, or the remaining battery charge is not enough for printer operation when the battery is used to supply the power.)

(1) Print temperature error is not an abnormality.*

*(*2) The battery charges when an AC adapter is connected and the printer is Off.*

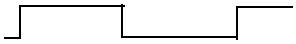
When you see an error described as "Impossible to recover" in the recovery column, turn off the printer as soon as possible and consult your dealer.

When the printer beeps, see also "Beeping Types" (page 3-2).

3.2 Printer Beeps

3.2.1 Beeping Types

The printer beeps in some situations. The beeping patterns are as follows.

Beeping Pattern	The beeping indicates mean	Beeping times	Switch method to Enable/disable
1000 ms ON 1000 ms OFF 	• Battery remaining amount is "L level" or less • The printer can't find a device with which Bluetooth connection possible (the default is "disabled") point. • Roll paper end • An error has happened.	5 times	Memory switch specify the beeping enable/ disable • Battery remaining amount (Msw 8-2) • Roll paper end (Msw 8-4) • Error has happened (Msw 8-5) • Can't find a device with which Bluetooth connection possible (Msw 8-3)
100 ms ON	• A self-test printing (when you press the FEED button)	1 time	This beeping is always enabled.
Other patterns	• Application transmit "beeper command"to printer.	Depends on the application	--

3.3 Printer Beeps When the Power is Turned on

When printer can't find a device with which Bluetooth connection possible, the printer beeps to warn you. [See "Printer Beeps" (page 3-2) for the beeping pattern.]

3.4 Paper Jam

When there is a paper jam, follow the procedure below.

1. Open the roll paper cover and the peeler cover.
2. Remove the jammed paper.
3. Close the covers
4. Transmit the error recovery command.

Note:
For error recovery command information, see the manual for each control method (OPOS, Advanced Printer Driver, ESC/POS commmand).

3.5 To Confirm the Current Setting of the Printer

This printer has two functions to confirm the current setting of the printer.

- Self test mode

  This mode prints all settings of the printer and a character printing test on roll paper. (Ex: serial communication condition, Bluetooth setting, memory switch setting, etc...)

3.5.1 Self test mode

The self test lets you know if your printer is operating properly. It checks the control circuits, printer mechanisms, print quality, control software version, and DIP switch settings.

This test is independent of any other equipment or software, so it is a good idea that run it when you first set up the printer and if you have any trouble. If the self test works correctly, the problem is in the other equipment or the software, not the printer.

1. Make sure the printer is turned off and the peeler cover is closed properly.
2. While holding down the FEED button, turn on the printer using the switch on the front of the printer. Continue to hold the FEED button until the ERROR LED comes on. The self test prints the printer settings and then prints the following, cuts the paper, and pauses.

If you want to continue SELF-TEST printing, please press FEED button.

3. Press the FEED button to continue printing. The printer prints a pattern using the built-in character set.

   Note:
   If you would like to finish the test printing, turn off the power.

4. The self test automatically ends after printing the following:

   ```
   *** completed ***
   ```

The printer is ready to receive data as soon as it completes the self test.

Note:
If you want to pause the self test manually, press the FEED *button. Press the* FEED *button again to continue the self test.*

3.5.2 Resetting the Printer

Reset to initialize the printer's Bluetooth settings (passkey, device name).

1. Open the paper roll cover.
2. Turn the printer On while pressing the FEED button.
3. Press the FEED button 6 times.
4. Close the paper roll cover.
5. The reset procedures are printed. (Open the paper roll cover, press the FEED button, close the paper roll cover.)
   The reset begins after "Initialize" prints and the paper roll has been cut. The printer restarts after initialization.

Note:
For the TM-P60 with Peeler, initialization completes several seconds after the paper roll is cut.

3.6 Hexadecimal Dump Mode

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hex dump function, the printer prints all commands and other data in hexadecimal format, along with a guide section to help you find specific commands.

To use the hex dump feature, follow these steps:

1. After you make sure the printer is off, open the peeler cover.
2. While you hold down the FEED button, turn on the printer.

3. Close the cover.

4. Run any software program that sends data to the printer. The printer prints "Hexadecimal Dump" and then all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters that correspond to the codes. Part of a hexadecimal dump is shown below:

```
                    Hexadecimal Dump


 To terminate hexadecimal dump,press

FEED button three times.


  1B 21 00 1B 26 02 40 40 40 40    . ! . . & . @ @ @ @

  1B 25 01 1B 63 34 00 1B 00 1B    . % . . c 4 . . . .

  41 42 43 44 45 46 47 48 41 42    A B C D E F G H A B
```

   - A period (.) is printed for each code that has no ASCII equivalent.
   - In hex dump mode all commands except real time ESC/POS commands are disabled.

5. Pressing the POWER button turns off the hex dump mode and returns the printer to the normal mode. Or, press the FEED button three times to terminate the hexadecimal dump.

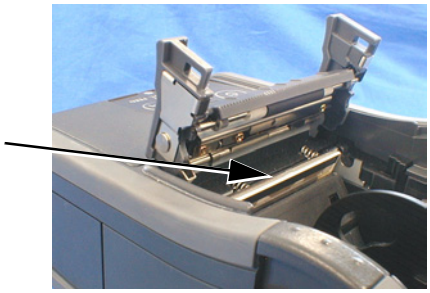
   Note:
   The hexadecimal dump mode can't be used with OPOS or the APD.

3.7 Cleaning the Thermal Head

⚠ CAUTION:

After printing, the thermal head can be very hot. Be careful not to touch it and to let it cool before you clean it. Do not damage the thermal head by touching it with your fingers or any hard object.

Turn off the printer, open the peeler cover and the roll paper cover, and clean the thermal elements of the print head with a cotton swab moistened with an alcohol solvent (ethanol, methanol, or IPA).

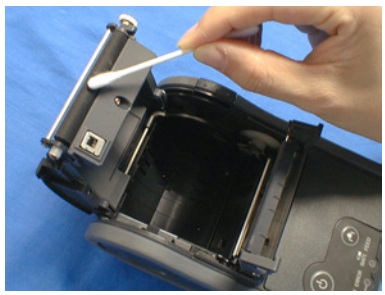


EPSON recommends cleaning the thermal head periodically (generally every 6 months) to maintain print quality.

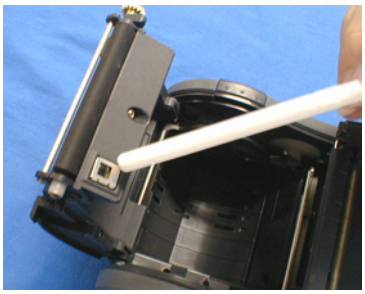
3.8 Cleaning the Platen Roller/Roll Paper End Sensor

When paper dust accumulates on the platen rollers or the roll paper end sensor, follow the steps below to clean them. To maintain good functional capabilities, clean them regularly (every 6 months).

1. Turn off the printer, open the peeler cover, and then the roll paper cover.
2. Clean the platen roller with a cotton swab lightly moistened with water or alcohol.



3. Blow the paper dust accumulated around the roll paper end sensor with a blower or a straw.



⚠ CAUTION:

Do not wipe the roll paper end sensor with water or alcohol. Its functional capabilities may be affected.

4. Close the roll paper cover after the water or alcohol has dried.

3.9 Cleaning the Peeler Unit

After the peeler is used for a prolonged period of time, the glue from the labels accumulates on the rollers of the peeler unit. If you leave the rollers in such a condition, the glue may stick to issued labels, or a paper jam may occur. To prevent malfunctions and maintain good print quality, clean the rollers regularly (every 20, 000 labels).

You can clean them easily if you use a wasted label.

Note:

Do not use any alcohol based solvents for cleaning. Such solvents may enter the roller shaft and cause a malfunction of the peeler.

Chapter 4
Application Development Information

This section contains usable information to develop POS systems that use this printer.

4.1 About wireless communication

4.1.1 For Application developing

The TM-P60 with Peeler uses wireless comunication technology; therefore temporary communication breaks may occur when you move or are in an outside environment. When you develop application software using wireless communication, you should consider this.

We recommend you confirm whether or not the printer printed after every print data transmission unit. Detection of communication errors and recovering from such errors are also important. Data communication without confirmation of printing and detetection of communication errors may cause data loss.

- Time until printing starts (Bluetooth specification)

A wireless connection is not constantly maintained between the host device and the printer. When printing starts and the connection is reestablished, there may be a time lag between the time that the host device commands the print job to start and the time that actual printing begins. This is because some time is needed to manage the connection between the host device and the printer. The time required depends upon the operating environment.

- Disconnection timing (Bluetooth specifications)

Even if data is no longer being sent by the host application, data may still remain in the printer's internal buffer. Data within that buffer may need to be deleted when the device connection is terminated. When printing or terminating a wireless connection, use the status sheet, etc., to confirm that transmitted data has actually printed.

4.2 About the Battery Remaining Amount

4.2.1 The battery remaining amount

This printer has a battery to supply power. The battery has four statuses:

Battery Status	The battery LED condition	Description
Level H (High)	Off	The remaining battery charge is between 100% and approximately 50% when the amount of difference between the full battery and level L is 100%.
Level M (Medium)	Flashing	The remaining battery charge is between approximately 50% and level L when the amount of difference between the full battery and level L is 100%.
Level L (low)	On	The battery needs to be replaced or recharged because the remaining battery charge is low.
Level S (Serious)	On	The printer will not operate because the remaining battery charge is too low.

*When an AC adapter is connected to the printer, if the power is turned on, the "battery LED condition" is always Off and if the power is turned off, the charging is being performed and the "battery LED condition" is On.

4.2.2 The method to confirm the battery status

The battery status can be confirmed by every control method.

4.2.2.1 ESC/POS command

The beeper function can be operated by commands. See the "ESC/POS Application Programming Guide" for details.

4.3 Beeper function

This printer has a beeper function. The beeper beeps automatically when the following conditions occur. The automatic beeping enabled/disabled is switched by a memory switch. See "Memory Switches" (page 2-17) for details.

- ❑ The remaining battery charge is low
- ❑ Roll paper is out
- ❑ Printer has an error
- ❑ An available host device cannot be found (default is set to disabled).

In addition, the buzzer can be turned on using commands from the application. The various control methods are explained in the section below.

4.3.1 ESC/POS command

The beeper function is able to be operated by commands. See the "ESC/POS Application Programming Guide" for details.

4.4 Various Status Categories

This printer is able to send various status reports to the host PC. This section describes the kind of statuses and handling.

Status Categories	Description
Roll Paper cover status	Roll paper cover is open or closed
FEED button status	Paper feed button is pressed or not
Error status	Various error information (Off-line / On-line), (detail of the error; Mechanical error, autocutter error, auto-recovery error, unrecoverable error)

The statuses are useful for the following situations.

- ❏ When an error status is sent to the host PC, the host PC can display an error message or solution message for operator (with beeping).
- ❏ When "Paper end" status is sent to the host PC, the host PC can display a message for the operator to replace roll paper.

4.4.1 ESC/POS commands

When you use ESC/POS commands to control the printer, you can get the status by using "status command" including Auto Status Back command (ASB.) Please refer to "ESC/POS APG."

4.5 NV memory

This printer has NV memory (Non-volatile). The data of NV memory remains after you turn off the power. The NV memory is available in two ways.

1. NV Graphics

   Please refer "NV Graphics Printing" (page 4-4) for details of the function.

2. User NV memory

   There is free area in the NV memory that the user can use. You can use this free area for notations, to write other character information, or for many other purposes. The data remains after you turn off the power. Use ESC/POS commands to read and write this data. The following are examples of purposes.

   - Date of the printer for maintenance

- ID definition for developer or POS system

Note the following when writing to and erasing NV memory.

❑ The following restrictions apply when performing NV memory operations (including data writing and erasing).

- The paper FEED button must not be used to feed paper.
- The real-time command must not be executed.
- The ASB status will not be sent, even when the ASB function is set to enabled.

❑ The printer sometimes enters the Busy state while data is written to NV memory. It is important not to send data from the host computer while the printer is in the Busy state, as it will be incapable of processing any received data.

❑ Frequent use of the functions for writing to and erasing data from NV memory can damage the memory. As a rule in using the various commands, avoid writing to NV memory more than 10 times per day.

4.6 NV Graphics Printing

This printer has an "NV Bit-Graphics" Function. This function provides printing Graphics (e.g. a shop logo.) This function is available for ESC/POS control method.

EPSON provides a utility, "TMFLogo," that enables registration of a bitmap image in the NV memory of an EPSON TM series printer. The bitmap image in the NV memory can be printed with the printer by using each control method.

	Printable Size	**Printing method**
NV Graphics	<width> Paper width, or less than paper width. <height> 1200dot (normal mode) 2400dot (double-height mode)	Store Store NV Graphics to NV memory by TMFLogo utility. If you store the bitmap in NVRAM, it is not necessary to restore it unless the NV memory is deleted.
		Print Depends on each control method.

Note

NV graphics data shares the domain used by user NV memory record data; therefore, the entire capacity of the domain to which NV graphics data and user NV memory data are defined is targeted. The TM-P60 with Peeler's entire capacity is 384 KB.

Example: The NV memory can store 64 items graphics data when the file size of a graphic is 6 KB.

4.6.1 ESC/POS command

See "ESC/POS Application Programming Guide" about the method.

4.6.2 Tips for Visual Basic

When programming with Visual Basic, limitations prevent data from 81h through 9Fh and from E0h through FEh from being sent as characters. Therefore, you may be not able to print a part of Page 0 (for example ***ä, ü, ë***)in Visual Basic.

However, you can use the following procedure to send this data.

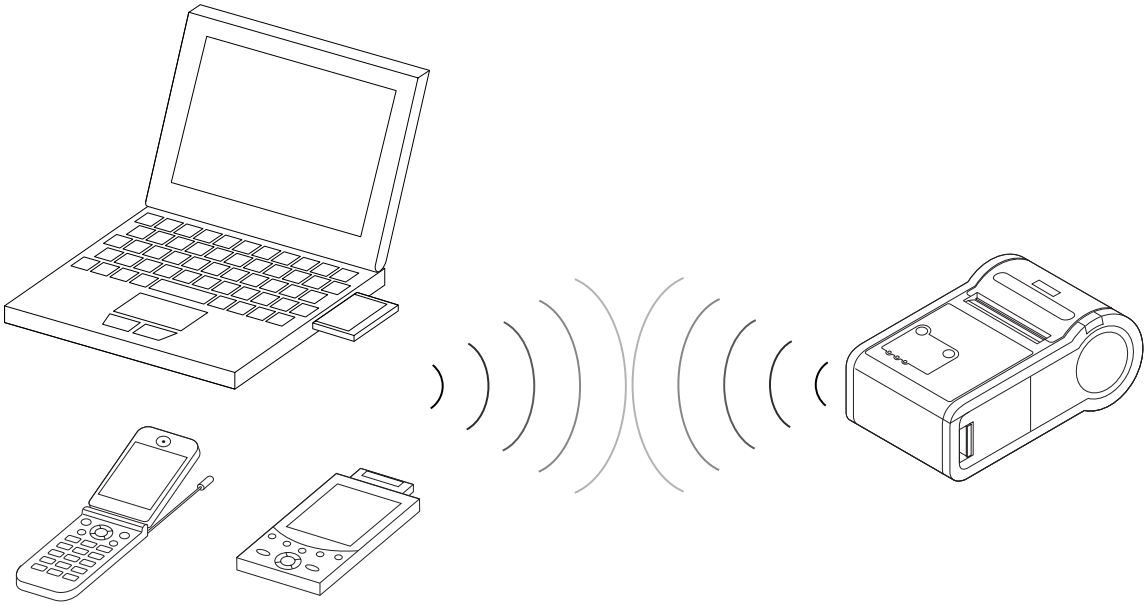
```
Dim Send_ data(0) As Byte
Send_data(0) = &h81 '1 byte of sending data
MSComm1.Output = Send_data
```

Appendix A
About Bluetooth

A general overview of Bluetooth, its specifications, and tips for using it effectively are explained in this section.

A.1 Bluetooth Overview

Bluetooth is a standard for wirelessly connecting together peripheral devices such as personal computers, printers, etc. It can be used to easily network together not only personal computers, but a variety of devices as well.



Bluetooth also uses data encryption and random frequency switching technology to attain a high level of security and prevent data interception.

A.2 Bluetooth Specifications

A.2.1 Piconet

Bluetooth uses a master/slave device relationship to create what is called a piconet. One device within the piconet network is the master device that generates a frequency hopping pattern. A maximum of seven slave devices can participate in a single network.

A slave device can also participate in another different piconet. In addition, the master device of one piconet can act as a slave device for a different piconet.

The TM-P60 with Peeler is a dedicated slave device.

A.2.2 Communication Range

The Bluetooth communication range is approximately 10 meters.

The actual communication range differs depending on the surrounding radio wave environment, objects of interference, and the setup location. Make sure to sufficiently test the communication range when setting up a network.

A.2.3 Bluetooth Frequency

Bluetooth operates at a frequency of 2.4GHz. This frequency can also be used by IEEE802.11b/g wireless LAN and microwave devices.

Bluetooth uses a frequency hopping method. If a specific frequency is being used by another device and causing interference, Bluetooth technology will quickly move to a different frequency to minimize cross-talk that could prevent communication.

The master device generates this frequency shifting pattern which is then followed by the slave device.

A.2.4 Standby Mode

When Bluetooth communication is occurring, it is in "Active Mode". It is in "Standby Mode" when no communication is occurring. This standby mode consists of several patterns. The master device sets which standby mode to move to and how long after communication has ended to move to that mode.

A.2.5 Security

Bluetooth is able to secure high level security functions due to the following points.

- ❏ Frequency Hopping
  - Bluetooth is constantly moving between frequencies. Since its pattern of frequency shifting is known only by the master and slave devices, any devices that are attempting to intercept communications cannot follow these changes.
- ❏ Authentication
  - When Bluetooth is used, authentication occurs between the host and slave devices. Data passing between authenticated devices is encrypted prior to transmission, making it difficult to intercept and decrypt.
- ❏ Short communication range
  - Bluetooth transmission strength is relatively weak and the radio wave dispersal distance short. This reduces the danger of the radio waves traveling too far and being intercepted.

A.3 Using Bluetooth Effectively

- ❏ See "Communication Range" on page A-2 for information about Bluetooth communication range.

- ❏ Place Bluetooth compatible devices away from other electrical devices. Do not operate near automatic doors, fire alarms, etc., as a malfunction could occur.
  Using a device such as a microwave oven that emits strong high-frequency energy may cause interference. If this occurs, relocate the Bluetooth device(s) to a location with less interference.

- ❏ If a device that uses the same frequency range is located nearby, improper communication may result. If this occurs, relocate the printer device(s) to a location with less interference.

- ❏ Bluetooth and wireless LAN use the same frequency range (2.4GHz). Using both types of devices near each other can cause interference. Make sure to separate by 10 meters or more.

⚠ *WARNING:*

- ❏ Do not use near medical devices.
  Bluetooth radio waves may interfere with heart pacemakers or other electrical medical devices.

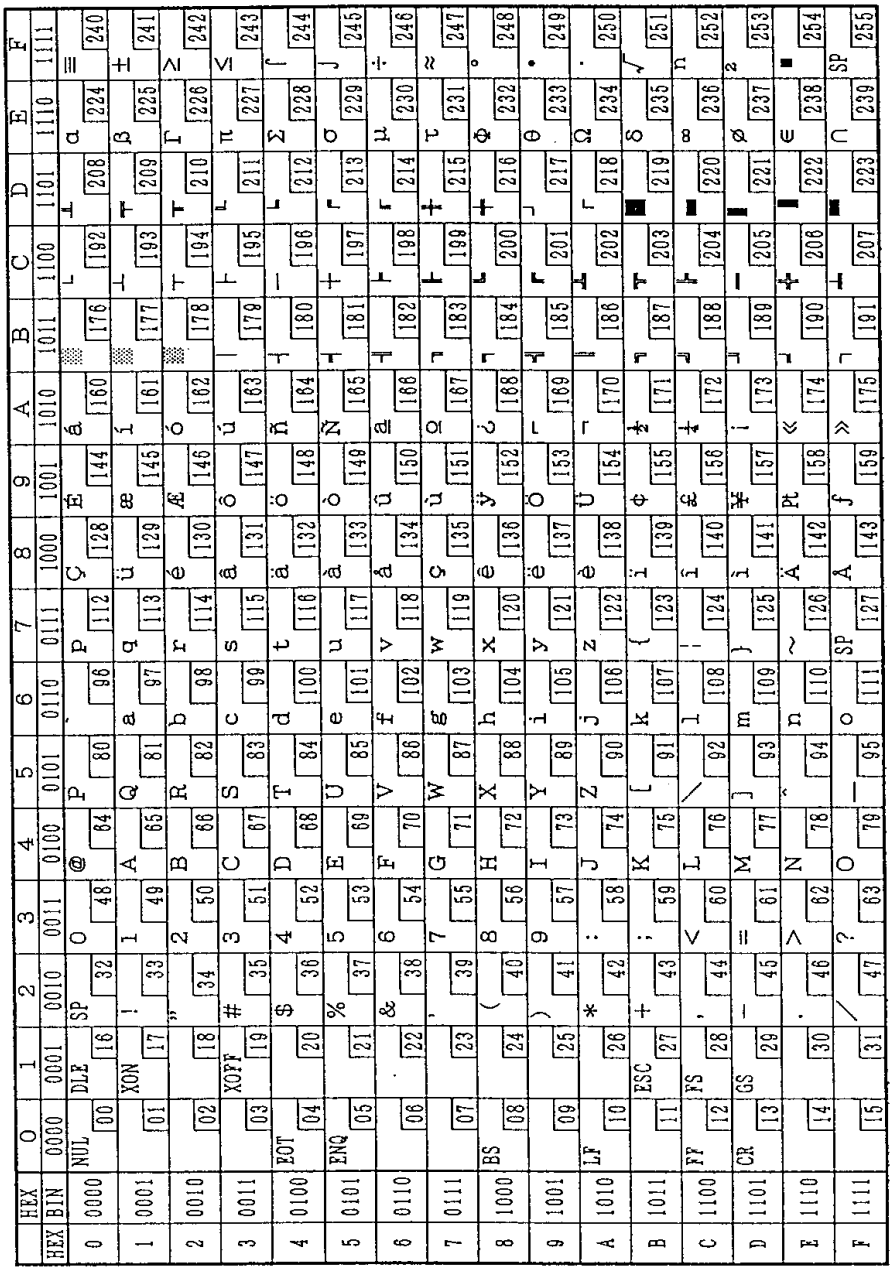
- ❏ Make sure to use at least 22cm or more away from any heart pacemakers.
  Bluetooth radio waves could effect pacemaker operation.

- ❏ Do not use Bluetooth devices near automatically controlled devices such as automatic doors or fire alarms.
  Bluetooth radio waves can cause these devices to malfunction and may result in injury.

Appendix B
Character Code Tables

B.1 Page 0 (PC437: USA, Standard Europe)

(International character set)



B.2 Page 1 (Katakana)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	128	144	SP 160	176	タ 192	ミ 208	224	× 240
1	0001	129	145	。 161	ア 177	チ 193	ム 209	225	円 241
2	0010	130	146	「 162	イ 178	ツ 194	メ 210	226	年 242
3	0011	131	147	」 163	ウ 179	テ 195	モ 211	227	月 243
4	0100	132	148	、 164	エ 180	ト 196	ヤ 212	228	日 244
5	0101	133	149	・ 165	オ 181	ナ 197	ユ 213	229	時 245
6	0110	134	150	ヲ 166	カ 182	ニ 198	ヨ 214	230	分 246
7	0111	135	151	ァ 167	キ 183	ヌ 199	ラ 215	231	秒 247
8	1000	136	152	ィ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	1001	137	153	ゥ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	1010	138	154	ェ 170	コ 186	ハ 202	レ 218	✦ 234	区 250
B	1011	139	155	ォ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	1100	140	156	ャ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	1101	141	157	ュ 173	ス 189	ヘ 205	ン 221	○ 237	人 253
E	1110	142	158	ョ 174	セ 190	ホ 206	゛ 222	／ 238	▒ 254
F	1111	143	159	ッ 175	ソ 191	マ 207	° 223	＼ 239	SP 255

B.3 Page 2 (PC850: Multilingual)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Đ 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▬ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	— 238	▮ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

B.4 Page 3 (PC860: Portuguese)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	È 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	Á 134	Ú 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	Ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	Ê 137	Õ 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	Í 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	^{n} 252
D	1101	ì 141	Ù 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	^{2} 253
E	1110	Ã 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	Â 143	Ó 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

B.5 Page 4 (PC863: Canadian-French)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	¦ 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	È 145	´ 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Ê 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	Â 132	Ë 148	¨ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	Ï 149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	¶ 134	û 150	³ 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	— 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	¤ 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	ë 137	Ô 153	⌐ 169	╣ 185	╔ 201	┘ 217	θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	═ 141	Ù 157	¾ 173	╜ 189	═ 205	▌ 221	ø 237	² 253
E	1110	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	§ 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

B.6 Page 5 (PC865: Nordic)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	0101	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	0110	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	1000	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	1001	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	∞ 236	n 252
D	1101	ì 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	ø 237	2 253
E	1110	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	∈ 238	■ 254
F	1111	Å 143	ƒ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

B.7 Page 16 (WPC1252)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	€ 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	ð 240
1	0001	SP 129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	0010	’ 130	’ 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	0011	*f* 131	“ 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	0100	” 132	” 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	0101	… 133	• 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	0110	† 134	– 150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	0111	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	+ 247
8	1000	ˆ 136	˜ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	1001	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	1010	Š 138	š 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	1011	‹ 139	› 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	1100	Œ 140	œ 156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	1101	SP 141	SP 157	- 173	½ 189	Í 205	Ý 221	í 237	ý 253
E	1110	Ž 142	ž 158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
F	1111	SP 143	Ÿ 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

B.8 Page 17 (PC866: Cyrillic #2)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	А 128	Р 144	а 160	176	192	208	р 224	Ё 240
1	0001	Б 129	С 145	б 161	177	193	209	с 225	ё 241
2	0010	В 130	Т 146	в 162	178	194	210	т 226	Є 242
3	0011	Г 131	У 147	г 163	179	195	211	у 227	є 243
4	0100	Д 132	Ф 148	д 164	180	196	212	ф 228	Ї 244
5	0101	Е 133	Х 149	е 165	181	197	213	х 229	ї 245
6	0110	Ж 134	Ц 150	ж 166	182	198	214	ц 230	Ў 246
7	0111	З 135	Ч 151	з 167	183	199	215	ч 231	ў 247
8	1000	И 136	Ш 152	и 168	184	200	216	ш 232	° 248
9	1001	Й 137	Щ 153	й 169	185	201	217	щ 233	• 249
A	1010	К 138	Ъ 154	к 170	186	202	218	ъ 234	· 250
B	1011	Л 139	Ы 155	л 171	187	203	219	ы 235	√ 251
C	1100	М 140	Ь 156	м 172	188	204	220	ь 236	№ 252
D	1101	Н 141	Э 157	н 173	189	205	221	э 237	¤ 253
E	1110	О 142	Ю 158	о 174	190	206	222	ю 238	254
F	1111	П 143	Я 159	п 175	191	207	223	я 239	SP 255

B.9 Page 18 (PC852: Latin2)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	176	192	đ 208	Ó 224	240
1	0001	ü 129	Ĺ 145	í 161	177	193	Đ 209	ß 225	˝ 241
2	0010	é 130	Í 146	ó 162	178	194	Ď 210	Ô 226	˛ 242
3	0011	â 131	ô 147	ú 163	179	195	Ë 211	Ń 227	ˇ 243
4	0100	ä 132	ö 148	Ą 164	180	196	ď 212	ń 228	˘ 244
5	0101	ů 133	Ľ 149	ą 165	Á 181	197	Ň 213	ň 229	§ 245
6	0110	ć 134	ľ 150	Ž 166	Â 182	Ă 198	Í 214	Š 230	÷ 246
7	0111	ç 135	Ś 151	ž 167	Ě 183	ă 199	Î 215	š 231	¸ 247
8	1000	ì 136	ś 152	Ę 168	Ş 184	200	ě 216	Ř 232	° 248
9	1001	ë 137	Ö 153	ę 169	185	201	217	Ú 233	¨ 249
A	1010	Ö 138	Ü 154	170	186	202	218	ŕ 234	· 250
B	1011	ö 139	Ť 155	ź 171	187	203	219	Ű 235	ű 251
C	1100	î 140	ť 156	Č 172	188	204	220	ý 236	Ř 252
D	1101	Ź 141	Ł 157	ş 173	Ż 189	205	Ţ 221	Ý 237	ř 253
E	1110	Ä 142	× 158	« 174	ż 190	206	Ů 222	ţ 238	■ 254
F	1111	Ć 143	č 159	» 175	191	¤ 207	223	´ 239	SP 255

B.10 Page 19 (PC858: Euro)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	░ 176	└ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	0010	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	0100	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	0101	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	Õ 229	§ 245
6	0110	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	0111	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	1001	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	1010	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251
C	1100	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ý 236	³ 252
D	1101	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	▮ 254
F	1111	Å 143	ƒ 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

B.11 Page 255 (Blank page)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	0001	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	0010	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	0011	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	0100	SP 132	SP 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	0101	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	0110	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	0111	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	1000	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	1001	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	1010	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	1011	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	1100	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	1101	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	1110	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	1111	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

B.12 International Character Sets

Country	ASCII code (hexadecimal number)											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.	#	$	@	[	\	]	^	`	{	|	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
UK	£	$	@	[	\	]	^	`	{	|	}	~
Denmark I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	$	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain I	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	$	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	$	@	[	₩	]	^	`	{	|	}	~

Appendix C
FAQ

Q1. The buzzer rings when I turn the TM-P60 with Peeler on. What should I do?

A1.1 Check to see if the power LED is slowly blinking.

When the TM-P60 with Peeler is powered on, it searches for other available Bluetooth devices (host devices). If it cannot find a host device, the power LED slowly blinks and the buzzer sounds. If this occurs, follow the instructions below.

- ❏ Use a utility to confirm the host device's Bluetooth settings. Print the TM-P60 with Peeler self test to confirm if the device is recognized. The passkey, device name, and Bluetooth address are printed on the self test. See "To Confirm the Current Setting of the Printer" (page 3-3) for details on how to print a self test.

- ❏ The host device may not be within communication range. If there are any objects between the host device and the TM-P60 with Peeler, move the TM-P60 with Peeler and check to see if the LED has stopped blinking.

A1.2 Check to see if the error LED is illuminated or blinking.

If an error has occurred, the TM-P60 with Peeler will cause the buzzer to sound due to the memory switch settings. See "Beeping Types" (page 3-2) to check the error cause.

A1.3 Run a self test.

Various settings can be displayed by running a TM-P60 with Peeler self test. See "To Confirm the Current Setting of the Printer" (page 3-3) for self test procedures.

- ❏ Use a utility to confirm the host device's Bluetooth settings. Print the TM-P60 with Peeler self test to confirm if the device is recognized. The passkey, device name, and Bluetooth address are printed on the self test. See "To Confirm the Current Setting of the Printer" (page 3-3) for details on how to print a self test.

- ❏ The host device may not be within communication range. If there are any objects between the host device and the TM-P60 with Peeler, move the TM-P60 with Peeler and check to see if the LED has stopped blinking.

A1.4 Check the Battery Level

If the battery level is "L Level" or lower, the TM-P60 with Peeler will cause the buzzer to sound in accordance with the memory switch settings. Charge the battery. (See "About the Battery Remaining Amount" (page 4-2).

See "Charging the battery" (page 2-11) for battery charging procedures.

Q2. Can the buzzer be set not to sound?

A2.1 Change the memory switch settings.

You can set the memory switch settings so that the buzzer does not sound. See "Memory Switches" (page 2-17) for details regarding the memory switch.

Q3. The battery LED is illuminated or blinking. What should I do?

A 3.1 he battery doesn't have a charge.

Check the battery LED status to confirm the battery level. (See "About the Battery Remaining Amount" (page 4-2)).

See "Charging the battery" (page 2-11) for battery charging procedures.

Q4. The power LED is slowly blinking. What should I do?

A 4.1 Check the TM-P60 with Peeler and host device's Bluetooth settings.

Use a utility to confirm the host device's Bluetooth settings. Print the TM-P60 with Peeler self test to confirm if the device is recognized. The passkey, device name, and Bluetooth address are printed on the self test. See "To Confirm the Current Setting of the Printer" (page 3-3) for details on how to print a self test.

A 4.2 Check that the TM-P60 with Peeler is within Bluetooth communication range.

The host device may not be within communication range. If there are any objects between the host device and the TM-P60 with Peeler, move the TM-P60 with Peeler and check to see if the LED has stopped blinking.

Q5. I cannot connect the TM-P60 with Peeler to Bluetooth. What should I do?

A 5.1 Check the TM-P60 with Peeler and host device's Bluetooth settings.

Use a utility to confirm the host device's Bluetooth settings. Print a TM-P60 with Peeler self test to confirm if the device is recognized. The passkey, device name, and Bluetooth address are printed on the self test. See "To Confirm the Current Setting of the Printer" (page 3-3) for details on how to print a self test.

A 5.2 Another network is causing radio wave interference.

Radio wave interference can occur if a wireless LAN network is operating in the same area. Move the devices to a different area if this is the case.

A 5.3 There is a noise source near the TM-P60 with Peeler.

Communication may be impeded if a microwave oven or motor is operating in the same vicinity. Move the host device or TM-P60 with Peeler and check that communication is possible farther away from the noise source.

A 5.4 Check that the TM-P60 with Peeler power is On.

Turn on power to the TM-P60 with Peeler device.

A 5.5 Reset the TM-P60 with Peeler device to its default settings.

Reset the TM-P60 with Peeler to its default settings. (See "Resetting the Printer" (page 3-4)). Reset all communication settings after doing so. (See "Setup" (page 2-1).)

A 5.6 There is a problem with the host device.

If available, replace the host device with another functioning host device.

Q6. I cannot create a TM-P60 with Peeler Bluetooth serial connection.

A 6.1 Match the host device and TM-P60 with Peeler communication settings.

Run a TM-P60 with Peeler self test to confirm the settings. Make sure that the TM-P60 with Peeler and host device settings match.

A 6.2 After checking that the serial cable (OT-RS60) is connected, turn on the TM-P60 with Peeler.

Check that the TM-P60 with Peeler is connected to the PC with a serial cable (OT-RS60), and then turn on TM-P60 with Peeler power again.

A 6.3 The serial cable is not a type specified by EPSON.

Use a serial cable type specified by EPSON. We cannot guarantee communication when a cable other than the one specified (OT-RS60) is used.

A 6.4 TM-P60 with Peeler power is not on.

Turn on power to the TM-P60 with Peeler.

Q7. The device is disconnected from the network after connecting for several minutes.

A 7.1 The host device may be using a power management or suspend function.

Check that the power management and suspend functions on the host device are turned off.

Q8. Power to the TM-P60 with Peeler shuts off after being on several minutes.

A 8.1 The TM-P60 with Peeler's automatic power off interval is incorrectly set.

If an "Automatic Power Off Interval" is set for the memory switch, the TM-P60 with Peeler will automatically shut off in no data is received during the specified interval. Check the TM-P60 with Peeler's power management function. (See "Memory Switches" (page 2-17).)

Q9. I cannot print.

A 9.1 TM-P60 with Peeler power is off.

Turn on power to the TM-P60 with Peeler.

A 9.2 Power shuts off during printing.

The battery has no charge. Replace or charge the battery, or plug in the AC adapter.

EPSON

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